Improving scientific literacy to prevent plagiarism

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Preventing and Designing out Plagiarism
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Improving scientific literacy to prevent plagiarism

- What is science? “How science works”
- What is plagiarism?
- Scientific Writing Workshop
- Threshold Concepts (Meyer & Land)
- Perry’s Scheme of Ethical and Intellectual Development
- Providing opportunities to improve scientific literacy

What is Science?
("How science works")

Science:

Biology-Online.org

"The study of the material universe or physical reality in order to understand it. This is done by making observations and collecting data about natural events and conditions, then organising and explaining them with hypotheses, theories, models, laws, and principles.

The organised body of knowledge about the material universe which can be verified or tested.

A particular branch of either the process of study or the body of knowledge, such as astronomy, biology, chemistry, geology, and physics."

“But surely we know everything in anatomy now?”

- Recognise, identify, and design in opportunities to link teaching/learning and research.
- Scientific literacy (wrt both academic writing, and “How science works”) will increase.
- As understanding of plagiarism *and science* increases, plagiarism will decrease.

What is Plagiarism?

"Copying someone else's work and passing it off as your own"

"CHEATING - IT'S A MUG'S GAME!"

"Plagiarism is definitely a form of cheating and isn't fair on people who do the work themselves"

"Copying someone else's work whether it be a classmates or authors"

"The use of someone's words, ideas, work or data as your own"

Scientific Writing Workshop

L3 human biology students (Pharmacology, physiology, Anatomy, Neuroscience), 1 group (approx 30) at a time

- **3 main sections**:-
  - (i) What is plagiarism?
  - (ii) Summarising
  - (iii) Referencing
- **Mix of teaching techniques**: Whole-class, teacher-led; Lecture/information; small groups; individually; discussions
- **Resources**: Teacher, demonstrators, Effective Learning Advisor; GU Plagiarism Statement, List of descriptions, sample paragraphs, articles to summarise, Post-it's, highlighters, Referencing Guidelines, feedback sheet

Scientific Writing Workshop

STARTER (individually) Write definition of plagiarism on “Post-it”

INTRODUCTION: **Talk** (Purposes;GU Plagiarism Statement)

ACTIVITY: **WHAT IS PLAGIARISM?**

(i) “Where do you draw the line?” Choose between statements describing how to report another authors work

(ii)fit example paragraphs to statements

ACTIVITY: **PRACTICE AT SUMMARISING**

Write a summary of information from 3 sources using own words

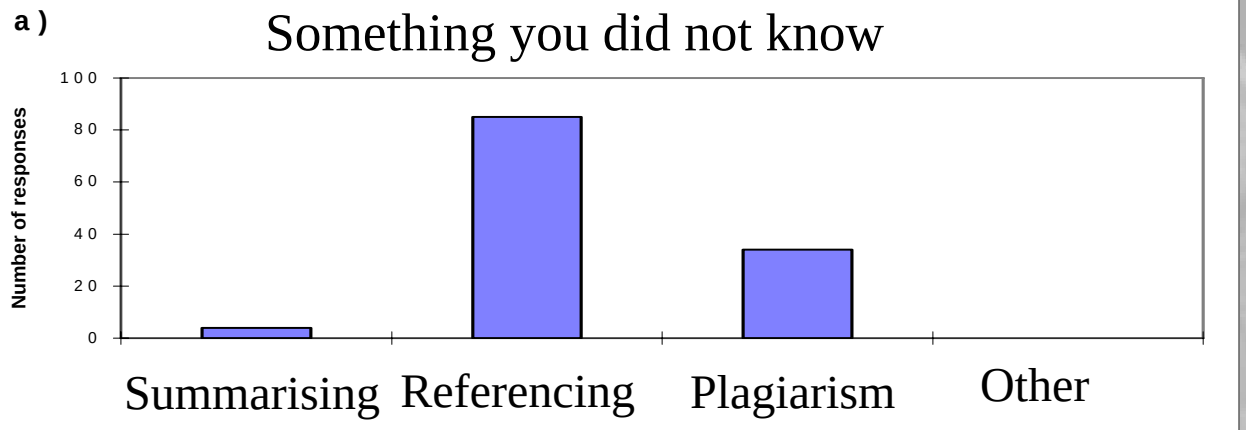
CLASS DISCUSSION: **HOW TO REFERENCE**

Guidelines sheet; look at copies of original journals; discuss

(Cogdell & Aidulis, 2008)

Scientific Writing Workshop

a)



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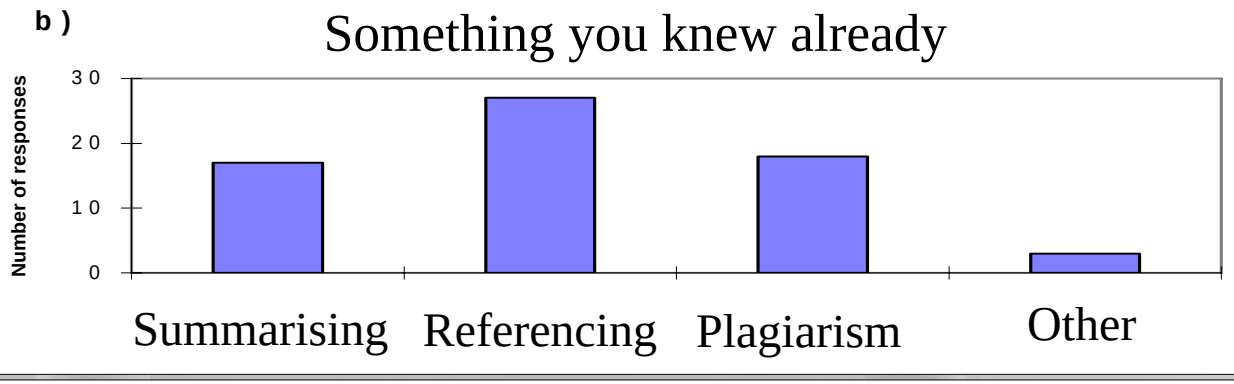

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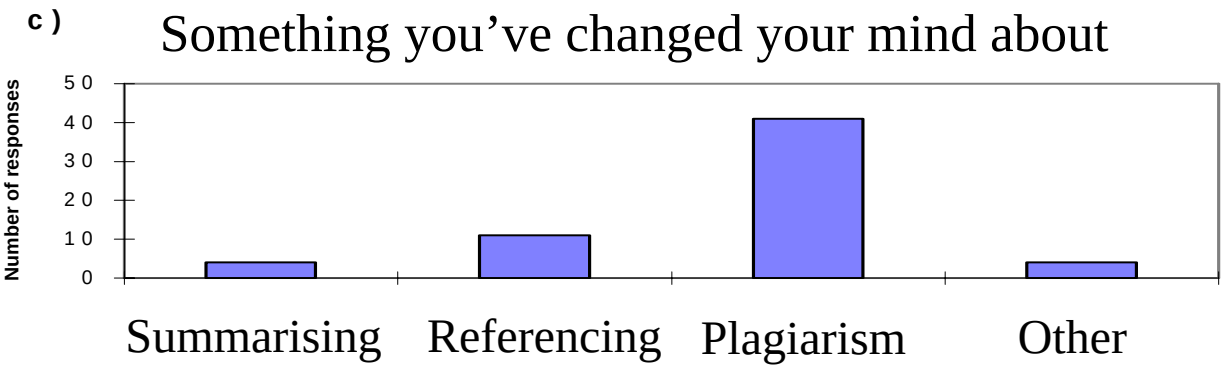

Feedback

“Made me think whether I ever do any of these things”.

“It is slightly harder but more fulfilling if putting articles into your own words and summarising”

“Good for establishing where you want to be, ie what you can/can’t do”

“Surprisingly useful. Didn’t expect to learn anything new.”

“Approach to writing (more from notes than direct from source)”

“Not to be too intimidated by journals”

Threshold Concepts

(Meyer & Land)

- Certain key concepts can be seen as “threshold”, and until these have been properly understood, the student cannot move on with their learning.
- “Moving on” can be problematic and uncomfortable; student has to “deconstruct” previous knowledge to see things in a new way.
- Deconstruction is a transitional state; students unable to do so (“pass through a portal”) remain in their current way of thinking.
- “Passing through the portal” requires effort and creativity; student at a “plateau” until ready to tackle next stage.

The nature of science, and plagiarism, are threshold concepts. Identify/create opportunities for students to “pass through the portal”.

Perry's Scheme of Ethical and Intellectual Development

- 9 "Positions"; hierarchical, with "transitions" between these.

- 4 main "supercategories":

  Dualism: right/wrong; black/white

  Multiplism: grey areas

  Relativism: weighting of evidence

  Commitment: Coming to a decision

	STUDENT A	STUDENT B	STUDENT C
STUDENT ROLE	Passive acceptor of knowledge	Realises that some responsibility rests with self: But what ? And How ?	Sees self as source of knowledge, or is confident of finding it Debater, making own decisions
TEACHER ROLE	Authority giving facts and know-how	Authority Where there are controversies, wants guidance as to which Authority favours	An authority among other authorities Values views of peers Teacher as a facilitator
VIEW OF KNOWLEDGE	Factual; Black and white; clear objectives Non-contoversial, exeptions unwelcome	Admits no longer black and white Feels insecure in this	Wants to expolre contexts; seeks interconnections Enjoys creativity and scholarly work
VIEW OF EXAMS	Regurgitation of facts Objective Hard work rewarded	Quantity better than Quality to demonstrate maximum knowledge	Quality is better than Quantity Wants room for expressio
	Dualism	***Multiplism***	***Relativism***

$$P \propto \frac{1}{U_p} \qquad P \propto \frac{1}{U_s}$$

Where P = plagiarism

U_p = understanding of plagiarism

U_s = understanding of science

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References/sources

CARROLL, J. (2002) *A handbook for deterring plagiarism in higher education.* Oxford, Oxford Centre for Staff and Learning Development

COGDELL, B. & AIDULIS, D. (2008) Dealing with plagiarism as an ethical issue. In: Roberts, T.S., *Student plagiarism in an online world: Problems and solutions*, London, Information Science Reference, pp. 38-59

MANN, S.J. (2006) *Explorations in learning in higher education*, New Lecturer ad Teacher Programme course handout, University of Glasgow

MEYER, J.H.F. & LAND, R. (2003) *Threshold concepts and troublesome knowledge (1) – linkages to ways of thinking and practising* within the disciplines. In "Improving Student Learning – Ten Years On". Rust, C. (ed), OCSLD, Oxford

PERRY, W.G. (1981). Cognitive and Ethical Growth: The Making of Meaning. In: Chickering, A.W. (ed), *The Modern American College*. Jossey-Bass, San Francisco. Cited in Mann (2006)

PERRY, W.G. (1999). *Forms of Ethical and Intellectual Development in the College Years: A Scheme.* Jossey-Bass Publishers, San Francisco, ISBN 0-7879-4118-2. Cited in Mann (2006)